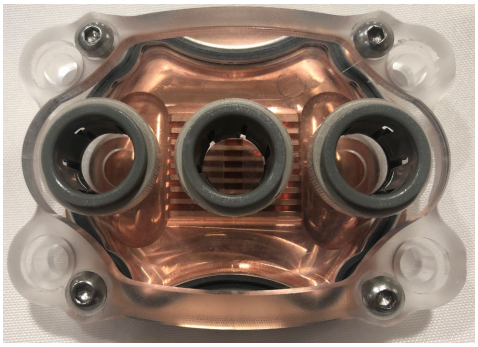
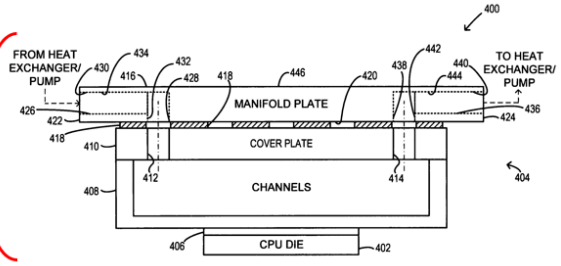
EXHIBIT 3

EXHIBIT A-9
Invalidity Claim Chart for U.S. Patent No. 8,746,330
Asetek Danmark A/S v. CoolIT Systems, Inc.
Northern District of California, Case No. 3:19-CV-00410 EMC

'330 Patent	**Obvious based on *Antarctica* in view of *Chang***
[1.0] A fluid heat exchanger comprising:	The *Antarctica* device is a fluid heat exchanger.   The *Chang* device is a fluid heat exchanger. Abstract ("A microchannel structure has microchannels formed therein. The microchannels are to transport a coolant and to be proximate to an integrated circuit to transfer heat from the integrated circuit to the coolant."); 2:31-45; 2:59-63; 8:55-63; FIGS. 1, 2, 4, 5, 11, 13, 14. Overview of One Embodiment of the *Chang* Cooler 
[1.1] a heat spreader plate defining an upper surface;	The *Antarctica* device has a heat spreader plate defining an upper surface.

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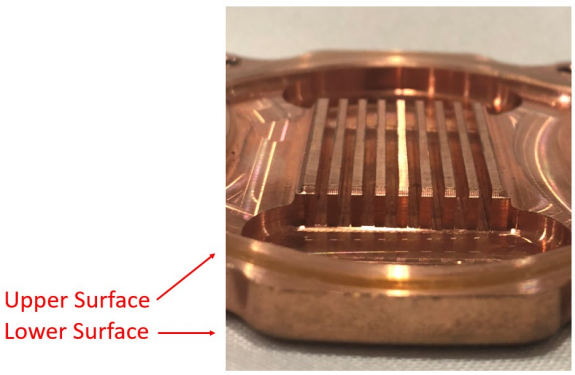
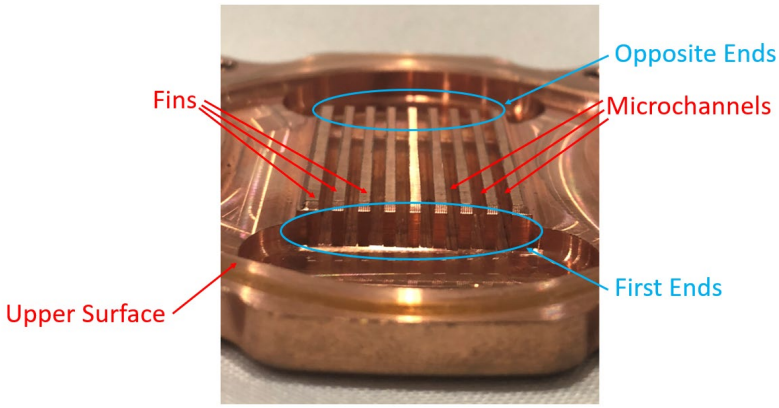
	
[1.2] a plurality of fins extending from respective proximal ends positioned adjacent the upper surface of the heat spreader plate to respective distal ends positioned distally from the upper surface of the heat transfer plate, wherein the plurality of fins defines a corresponding plurality of microchannels configured to direct a heat transfer fluid over the heat spreader plate, wherein each microchannel in the plurality of microchannels has a first end and an opposite end, wherein each microchannel in the plurality of microchannels extends substantially parallel with each other microchannel in the plurality of microchannels and has a continuous channel flow path between its respective first end and its respective opposite end;	The *Antarctica* device has a plurality of fins extending from respective proximal ends positioned adjacent the upper surface of the heat spreader plate to respective distal ends positioned distally from the upper surface of the heat transfer plate, wherein the plurality of fins defines a corresponding plurality of microchannels configured to direct a heat transfer fluid over the heat spreader plate, wherein each microchannel in the plurality of microchannels has a first end and an opposite end, wherein each microchannel in the plurality of microchannels extends substantially parallel with each other microchannel in the plurality of microchannels and has a continuous channel flow path between its respective first end and its respective opposite end. 

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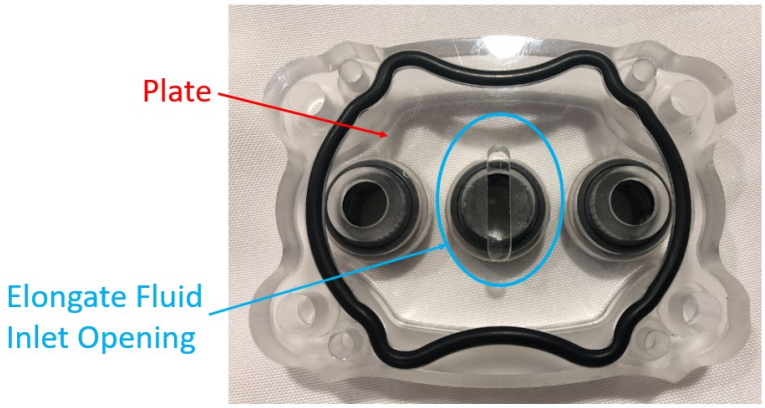
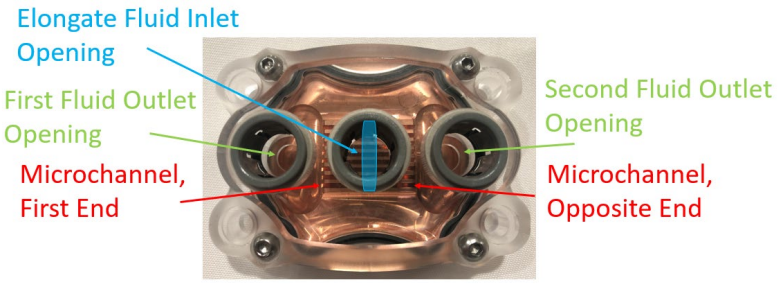
[1.3] a plate positioned over the distal ends of the plurality of fins and the corresponding plurality of microchannels to close off the plurality of microchannels adjacent the distal ends of the plurality of fins, wherein the plate positioned over the plurality of distal fin ends defines an elongate fluid inlet opening overlying and extending transversely relative to the plurality of microchannels between the plurality of microchannel first ends and opposite ends, wherein the plate is so positioned over the plurality of fins as to define a first fluid outlet opening from each microchannel in the plurality of microchannels at each of the microchannel first ends and an opposite fluid outlet opening from each microchannel in the plurality of microchannels at each of the microchannel opposite ends;	The *Antarctica* device has a plate positioned over the distal ends of the plurality of fins and the corresponding plurality of microchannels to close off the plurality of microchannels adjacent the distal ends of the plurality of fins, wherein the plate positioned over the plurality of distal fin ends defines an elongate fluid inlet opening overlying and extending transversely relative to the plurality of microchannels between the plurality of microchannel first ends and opposite ends, wherein the plate is so positioned over the plurality of fins as to define a first fluid outlet opening from each microchannel in the plurality of microchannels at each of the microchannel first ends and an opposite fluid outlet opening from each microchannel in the plurality of microchannels at each of the microchannel opposite ends.   To the extent CoolIT contends that the *Antarctica* does not have this claim element, such structure would have been obvious in view of *Chang*. Based on the *Antarctica* device in combination with the teachings of *Chang*, it would have been obvious for a person of ordinary skill in the art to modify the *Antarctica* device to have a plate structure like that in *Chang*. Such a modification would only have involved a combination

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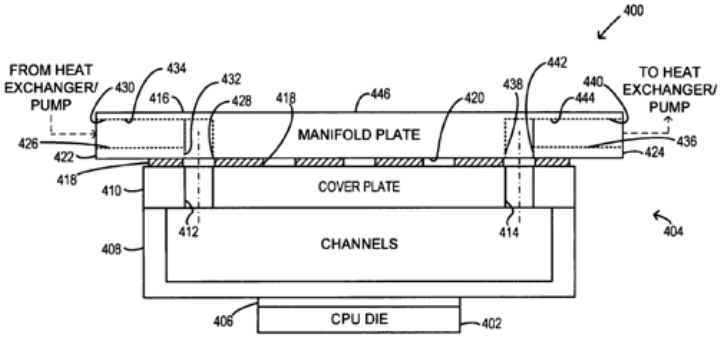
'330 Patent	Obvious based on *Antarctica* in view of *Chang*
	of prior art elements according to known methods to yield predictable results. As the Supreme Court explained, when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1740-1741 (2007). In the *Chang* device, a cover plate (410) is positioned over the distal ends of the side walls and microchannels, closing off the microchannels. *See* 5:5-13 ("The microchannel assembly 404 also includes a cover plate 410 positioned on (e.g., bonded to) the microchannel structure 408 to define top walls of the microchannels. The cover plate 410 may be provided in accordance with conventional practices and may have formed therein an inlet port 412 and an outlet port 414. The inlet port 412 is to allow coolant to flow into the microchannel structure 408 and the outlet port 414 is to allow coolant to flow out of the microchannel structure 408.")  The cover plate/lid (410/1406) is positioned over the microchannels such that there is a fluid inlet opening ("plenum" (1108)) that extends across and above the microchannels between the plurality of microchannel first ends and opposite ends. *See* 9:6-21 ("The lid 1406 also has a plenum 1108 (FIGS. 11, 12, 14) formed therein. As indicated in FIG. 14, the plenum 1108 extends across and above the microchannels 1404 at a central location of the microchannels. More specifically, and as seen from FIG. 11, the longitudinal axis of the plenum 1108 is perpendicular to a line (not shown) drawn from one inlet 1104 to the other inlet 1106 and is substantially equidistant from, and positioned between, the

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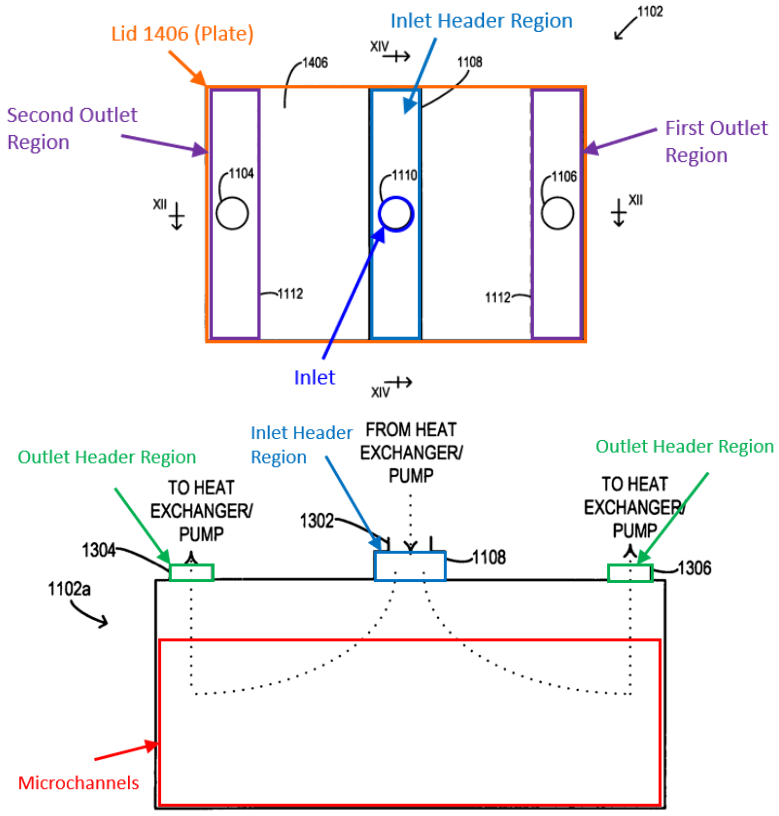
'330 Patent	Obvious based on *Antarctica* in view of *Chang*
	inlets 1104, 1106. It will be noted that the plenum 1108 is centrally located relative to the microchannel assembly. At a central location along the plenum 1108, an outlet 1110 is formed to allow coolant to flow out of the microchannel assembly 1102. In some embodiments, a manifold (not shown) may be positioned on the lid 1406 to manage distribution of coolant between the inlets 1104, 1106 and to take coolant out from the outlet 1110."); 9:46-54 (the flow direction can be reversed); FIGS. 11, 13, 14.



The cover plate/lid (410/1406) is positioned over the microchannels such that a first fluid outlet opening from each microchannel is at the microchannel first ends (i.e. outlet 1304) and an opposite fluid outlet opening from each microchannel at each the opposite ends (i.e. outlet 1306). *See* 9:24-54 ("In operation, coolant is flowed into the microchannel assembly 1102 via the inlets 1104, 1106. The coolant flows from the inlets into opposite ends of the microchannels via reservoirs 1112 (indicated in phantom in FIG. 11). The coolant flows from the opposite ends of each microchannel to a central

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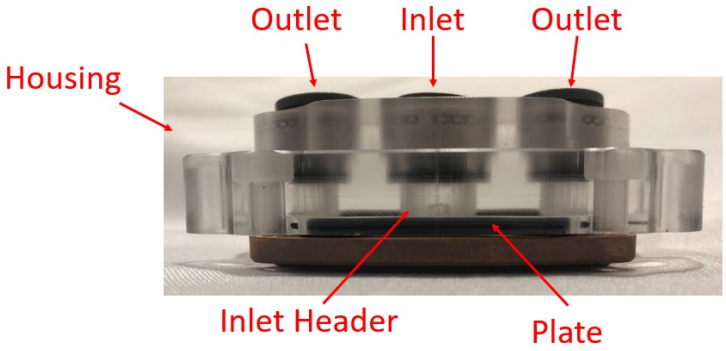
'330 Patent	**Obvious based on *Antarctica* in view of *Chang***
	location of the respective microchannel, as indicated in FIG. 12. From the central location in the microchannel, the coolant flows up into the plenum 1108. In the case of each microchannel not located directly under the outlet 1110, the coolant from the respective microchannel flows through the plenum toward the outlet 1110 (i.e., toward the center of the lid 1406). The coolant then flows out of the microchannel assembly via the outlet 1110. . . . Instead of flowing the coolant from the ends of the microchannels toward the center of the microchannel assembly, in other embodiments the coolant may flow from the center of the microchannel assembly out toward both ends of the microchannels, as schematically illustrated in FIG. 13. In this case essentially the same structure may be used, but the central port is used as an inlet (labeled 1302 in FIG. 13), and the ports at the ends of the microchannel are used as dual outlets (labeled 1304, 1306 in FIG. 13)."); FIGS. 2-5; 11, 13, 14.
[1.4] a housing spaced from the plate positioned over the plurality of distal fin ends, wherein the housing defines an inlet and an outlet, wherein the inlet defined by the housing opens to an inlet header and at least the first fluid outlet opening from each microchannel in the plurality of microchannels opens to an outlet header, wherein the outlet defined by the housing opens from the outlet header; and	The *Antarctica* device has a housing spaced from the plate positioned over the plurality of distal fin ends, wherein the housing defines an inlet and an outlet, wherein the inlet defined by the housing opens to an inlet header and at least the first fluid outlet opening from each microchannel in the plurality of microchannels opens to an outlet header, wherein the outlet defined by the housing opens from the outlet header. 

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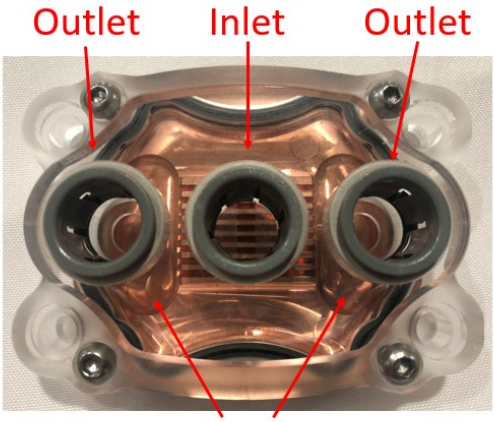
'330 Patent	**Obvious based on *Antarctica* in view of *Chang***
	 To the extent CoolIT contends that the *Antarctica* does not have this claim element, such structure would have been obvious in view of *Chang*. Based on the *Antarctica* device in combination with the teachings of *Chang*, it would have been obvious for a person of ordinary skill in the art to modify the *Antarctica* device to have a housing structure like that in *Chang*. Such a modification would only have involved a combination of prior art elements according to known methods to yield predictable results. As the Supreme Court explained, when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1740-1741 (2007). In the *Chang* device, a manifold plate (416) is spaced from the cover plate (410) covering the microchannels. The manifold plate has an inlet passage (426) and an outlet passage (436). The inlet passage opens into the inlet plenum (1108), which opens into the microchannels. The ends of the microchannels feed into reservoirs (1112), which in turn lead to the outlet passage through the manifold plate. *See* 5:14-55 ("In addition, the microchannel assembly 404 includes a manifold plate 416 that is mounted on the cover plate 410 to facilitate connection to the microchannel assembly of tubing (not shown) for the coolant. . . . The manifold plate 416 has formed therein an inlet passage 426. The inlet passage 426 provides fluid communication between a port 428 on the lower horizontal

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	surface 420 of the manifold plate 416 and a port 430 on the left side vertical surface 422. . . . Advantageously, the sealant 418 (or alternatively solder, as the case may be) is deployed in such a manner that coolant flows from the port 428 to the inlet port 412 without leakage. . . . The manifold plate 416 also has formed therein an outlet passage 436. The outlet passage 436 provides fluid communication between a port 438 on the lower horizontal surface 420 of the manifold plate 416 and a port 440 on the right side vertical surface 424. . . . The port 438 of the manifold plate 416 is aligned with the outlet port 414 of the cover plate 410. Sealant 418 (or solder, as the case may be) may be deployed in such a manner that coolant flows from the outlet port 414 to the port 438 without leakage."); 9:55-62 ("The various embodiments described above may be combined in a variety of ways. For example, the manifold plate (FIGS. 4, 5) or integrated manifold/lid (FIG. 6) may be used in conjunction with the microchannel structures of FIGS. 2, 3 or 8, 10 and/or with the reduced flow length inlet/outlet arrangements of FIGS. 11-14. For example, a manifold plate or lid may provide right-angle passages for each of the inlets/outlets shown in the embodiments or FIGS. 11-14."); FIGS. 2-5, 11, 13, 14.
[1.5] a seal extending between the housing and the plate positioned over the plurality of distal fin ends, wherein the elongate fluid inlet opening defined by the plate extends between a proximal end and a distal end, wherein a region of the inlet header is positioned adjacent a first side of the fins and a region of the outlet header is positioned adjacent the second side of the fins, and wherein the fins, the plate, the housing, and the seal are arranged such that the heat transfer fluid is	The *Antarctica* device has a seal extending between the housing and the plate positioned over the plurality of distal fin ends, wherein the elongate fluid inlet opening defined by the plate extends between a proximal end and a distal end, wherein a region of the inlet header is positioned adjacent a first side of the fins and a region of the outlet header is positioned adjacent the second side of the fins, and wherein the fins, the plate, the housing, and the seal are arranged such that the heat transfer fluid is directed from the inlet opening to the inlet header, through the elongate fluid inlet opening defined by the plate and into the microchannels, from the microchannels to the outlet header, and from the outlet header to the outlet defined by the housing.

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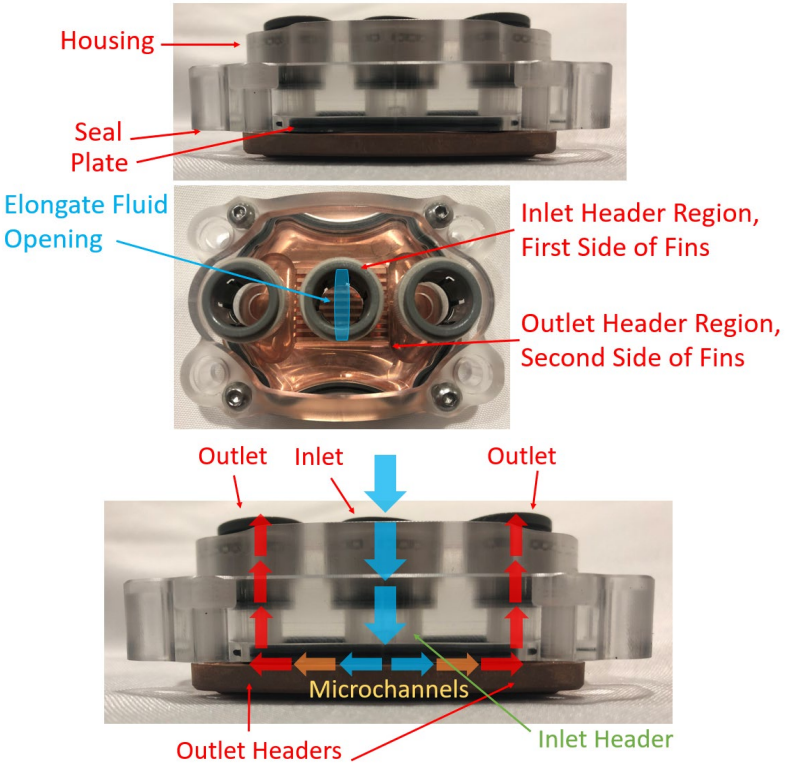
directed from the inlet opening to the inlet header, through the elongate fluid inlet opening defined by the plate and into the microchannels, from the microchannels to the outlet header, and from the outlet header to the outlet defined by the housing.	 The housing and the plate in *Antarctica* are connected to create a seal therebetween. If they were not connected, it also would have been obvious to provide a gasket between the plate and the housing to seal the inlet and outlet openings and prevent short-circuiting of the fluid. To the extent CoolIT contends that the *Antarctica* does not have this claim element, such structure would have been obvious in view of *Chang*. Based on the *Antarctica* device in combination with the teachings of *Chang*, it would have been obvious for a person of ordinary skill in the art to modify the *Antarctica* device to have a housing, plate, and flowpath structure like that in *Chang*. Such a modification would only have involved a combination of prior art elements according to known methods to yield predictable results. As the Supreme Court explained, when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1740-1741 (2007).

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	In the *Chang* device, the inlet plenum (1108) extends substantially across the microchannels. The inlet plenum (1108) is positioned in the “middle” and on the topside of the microchannels/fins and output manifolds (“reservoirs” 1112) are positioned along the outer (second) side of the channels/fins. The manifold plate (416) (“housing”) and cover plate (410) are sealed such that that coolant cannot pass between the inlet plenum and reservoirs other than via the flowpath through the microchannels. A portion of the plenum is adjacent to a first side of the microchannels/side walls and a region of the reservoirs are adjacent to a second side of the microchannels/side walls. Coolant is directed from the middle inlet port (1302), through the inlet plenum (1108), to the microchannels formed by the side walls, passes through the microchannels, then exits the microchannels into the outer outlet reservoirs (1112), and finally exits through the outlet ports (1304, 1306). *See* 5:14-55 (“In addition, the microchannel assembly 404 includes a manifold plate 416 that is mounted on the cover plate 410 to facilitate connection to the microchannel assembly of tubing (not shown) for the coolant. . . . The manifold plate 416 has formed therein an inlet passage 426. The inlet passage 426 provides fluid communication between a port 428 on the lower horizontal surface 420 of the manifold plate 416 and a port 430 on the left side vertical surface 422. . . . Advantageously, the sealant 418 (or alternatively solder, as the case may be) is deployed in such a manner that coolant flows from the port 428 to the inlet port 412 without leakage. . . . The manifold plate 416 also has formed therein an outlet passage 436. The outlet passage 436 provides fluid communication between a port 438 on the lower horizontal surface 420 of the manifold plate 416 and a port 440 on the right side vertical surface 424. . . . The port 438 of the manifold plate 416 is aligned with the outlet port 414 of the cover plate 410. Sealant 418 (or solder, as the case may be) may be deployed in such a manner that coolant flows from the outlet port 414 to the port 438 without leakage.”); 9:55-62 (“The various embodiments described above may be combined in a variety of ways. For example, the manifold plate (FIGS. 4, 5) or integrated manifold/lid (FIG. 6) may be used in conjunction with the microchannel structures of FIGS. 2, 3 or 8, 10 and/or with the reduced flow length inlet/outlet arrangements of FIGS.

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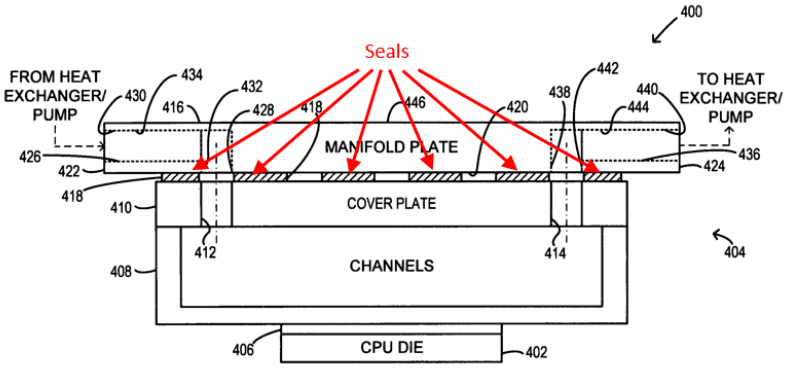
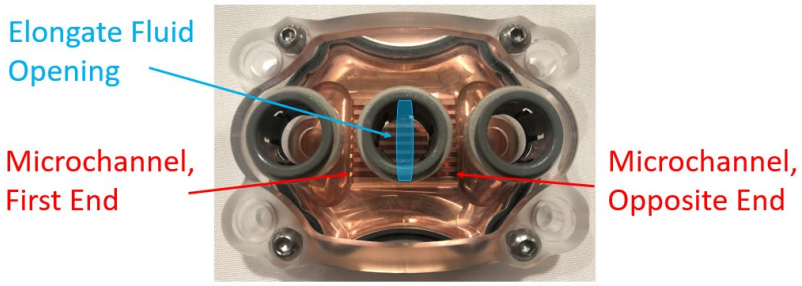
	11-14. For example, a manifold plate or lid may provide right-angle passages for each of the inlets/outlets shown in the embodiments or FIGS. 11-14."); FIGS. 2-5, 11, 13, 14. 
[2.0] A fluid heat exchanger according to claim 1 wherein the elongate fluid inlet opening is positioned in the middle 50% of a length measured between the microchannel first ends and the microchannel opposite ends.	*See* claim terms [1.0]-[1.5], above. The *Antarctica* device has an elongate fluid inlet opening positioned in the middle 50% of a length measured between the microchannel first ends and the microchannel opposite ends. 
[4.0] A fluid heat exchanger according to claim 1 wherein the heat spreader plate has an intended heat generating component contact region in a known location on the heat spreader plate and wherein the fluid inlet opening is positioned adjacent a central region of	*See* claim terms [1.0]-[1.5], above. The *Antarctica* device has heat spreader plate with an intended heat generating component contact region in a known location on the heat spreader plate, and the fluid inlet opening is positioned adjacent a central region of the intended heat generating component contact region.

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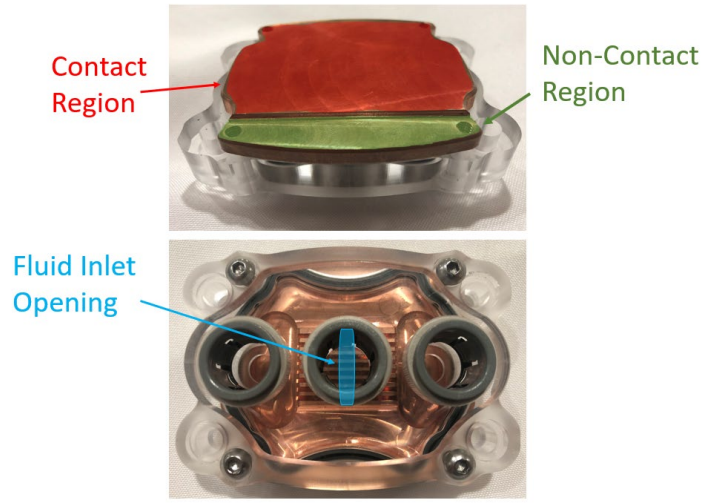
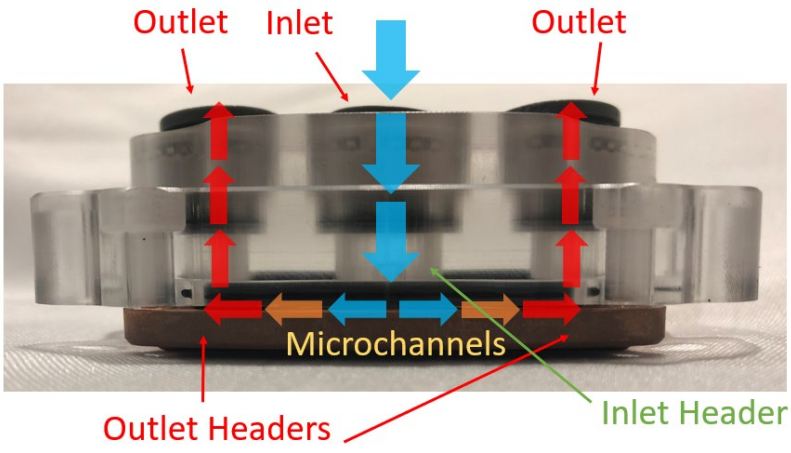
the intended heat generating component contact region.	
[6.0] A fluid heat exchanger according to claim 1 wherein the elongate fluid inlet opening defined by the plate is positioned opposite the heat spreader plate such that fluid passing through the fluid inlet opening defined by the plate into the plurality of microchannels moves orthogonally relative to and toward a plane defined by the upper surface of the heat spreader plate.	*See* claim terms [1.0]-[1.5], above. The *Antarctica* device is structured so that it has an elongate fluid inlet opening defined by the plate positioned opposite the heat spreader plate such that fluid passing through the fluid inlet opening defined by the plate into the plurality of microchannels moves orthogonally relative to and toward a plane defined by the upper surface of the heat spreader plate.  To the extent CoolIT contends that the *Antarctica* does not have this claim element, such structure would have been obvious in view of *Chang*. Based on the *Antarctica* device in combination with the teachings of *Chang*, it would have been obvious for a person of ordinary skill in the art to modify the

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	Antarctica device to have a housing, plate, and flowpath structure like that in *Chang*. Such a modification would only have involved a combination of prior art elements according to known methods to yield predictable results. As the Supreme Court explained, when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1740-1741 (2007). In the *Chang* device, the inlet plenum is placed in the middle/central portion of the heat exchanger opposite the heat generating components so as to keep the conduction lengths as short as possible. The liquid coolant passes through the inlet plenum (1108) into the channels and then moves orthogonally (e.g. perpendicularly) relative to and toward the surface of the integrated circuit (402). *See* 9:6-21 ("The lid 1406 also has a plenum 1108 (FIGS. 11, 12, 14) formed therein. As indicated in FIG. 14, the plenum 1108 extends across and above the microchannels 1404 at a central location of the microchannels. More specifically, and as seen from FIG. 11, the longitudinal axis of the plenum 1108 is perpendicular to a line (not shown) drawn from one inlet 1104 to the other inlet 1106 and is substantially equidistant from, and positioned between, the inlets 1104, 1106. It will be noted that the plenum 1108 is centrally located relative to the microchannel assembly. At a central location along the plenum 1108, an outlet 1110 is formed to allow coolant to flow out of the microchannel assembly 1102. In some embodiments, a manifold (not shown) may be positioned on the lid 1406 to manage distribution of coolant between the inlets 1104, 1106 and to take coolant out from the outlet 1110."); 9:37-45 ("With this arrangement of flowing coolant from both ends of each microchannel toward a central location along the microchannel, the path of coolant flow along the microchannel from inlet to outlet is reduced by one-half relative to a given over-all length of the microchannel. As a result, the pressure drop along the coolant path from inlet to outlet may be substantially reduced (e.g., by about half), thereby reducing the requirements for the pump needed in the cooling system."); FIGS. 1, 4, 5, 11, 13.

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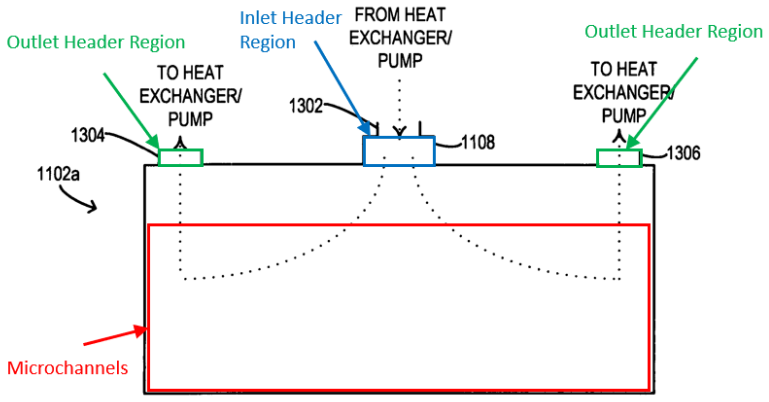
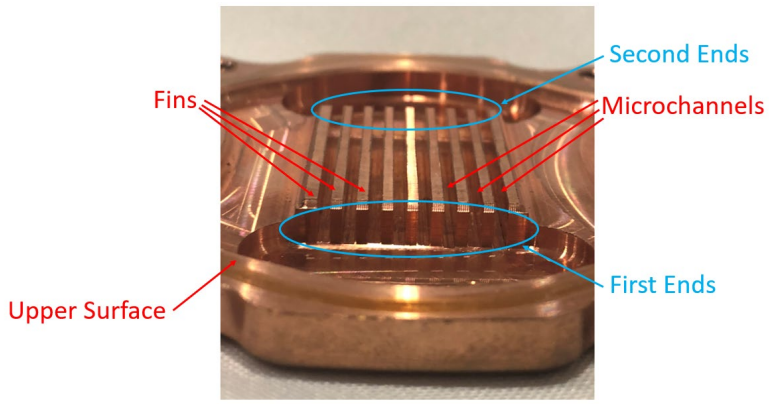
	
[12.0] A fluid heat exchanger comprising:	*See* claim term [1.0], above.
[12.1] a plurality of juxtaposed fins defining a corresponding plurality of juxtaposed microchannels, wherein each microchannel extends between a first end and a second end;	The *Antarctica* device has a plurality of juxtaposed fins defining a corresponding plurality of juxtaposed microchannels, wherein each microchannel extends between a first end and a second end. 
[12.2] a plate positioned over the juxtaposed fins and the corresponding plurality of juxtaposed microchannels, wherein the plate defines an elongate aperture extending transversely relative to each of the plurality of	The *Antarctica* device has a plate positioned over the juxtaposed fins and the corresponding plurality of juxtaposed microchannels, wherein the plate defines an elongate aperture extending transversely relative to each of the plurality of juxtaposed microchannels, wherein the elongate aperture is positioned between the first ends and the second ends of the plurality of juxtaposed microchannels.

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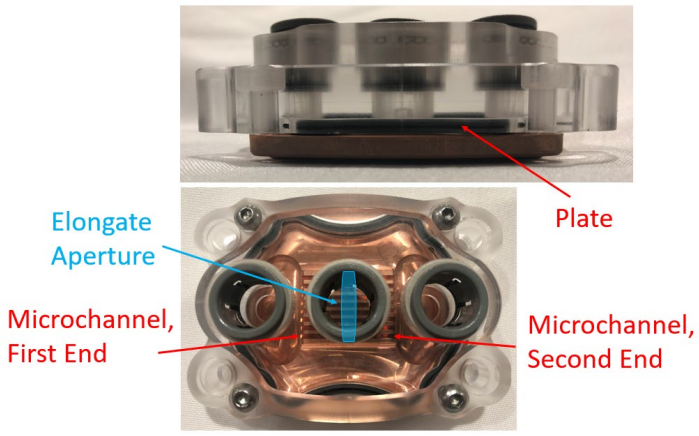
'330 Patent	**Obvious based on *Antarctica* in view of *Chang***
juxtaposed microchannels, wherein the elongate aperture is positioned between the first ends and the second ends of the plurality of juxtaposed microchannels;	 To the extent CoolIT contends that the *Antarctica* does not have this claim element, such structure would have been obvious in view of *Chang*. Based on the *Antarctica* device in combination with the teachings of *Chang*, it would have been obvious for a person of ordinary skill in the art to modify the *Antarctica* device to have a plate structure like that in *Chang*. Such a modification would only have involved a combination of prior art elements according to known methods to yield predictable results. As the Supreme Court explained, when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1740-1741 (2007). In the *Chang* device, a cover plate (410) is positioned over the distal ends of the side walls and microchannels, closing off the microchannels. *See* 5:5-13 ("The microchannel assembly 404 also includes a cover plate 410 positioned on (e.g., bonded to) the microchannel structure 408 to define top walls of the microchannels. The cover plate 410 may be provided in accordance with conventional practices and may have formed therein an inlet port 412 and an outlet port 414. The inlet port 412 is to allow coolant to flow into the microchannel structure 408 and the outlet port 414 is to allow coolant to flow out of the microchannel structure 408.")

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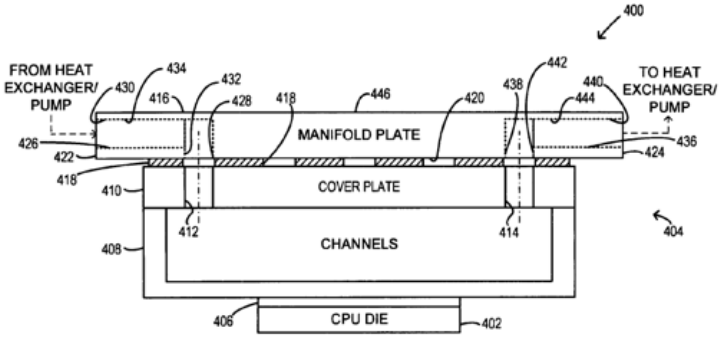
’330 Patent	Obvious based on *Antarctica* in view of *Chang*
	 The cover plate/lid (410/1406) is positioned over the microchannels such that there is an “elongate aperture” (“plenum” (1108)) that extends across and above the microchannels between the plurality of microchannel first ends and opposite ends. *See* 9:6-21 (“The lid 1406 also has a plenum 1108 (FIGS. 11, 12, 14) formed therein. As indicated in FIG. 14, the plenum 1108 extends across and above the microchannels 1404 at a central location of the microchannels. More specifically, and as seen from FIG. 11, the longitudinal axis of the plenum 1108 is perpendicular to a line (not shown) drawn from one inlet 1104 to the other inlet 1106 and is substantially equidistant from, and positioned between, the inlets 1104, 1106. It will be noted that the plenum 1108 is centrally located relative to the microchannel assembly. At a central location along the plenum 1108, an outlet 1110 is formed to allow coolant to flow out of the microchannel assembly 1102. In some embodiments, a manifold (not shown) may be positioned on the lid 1406 to manage distribution of coolant between the inlets 1104, 1106 and to take coolant out from the outlet 1110.”); 9:46-54 (the flow direction can be reversed); FIGS. 11, 13, 14.

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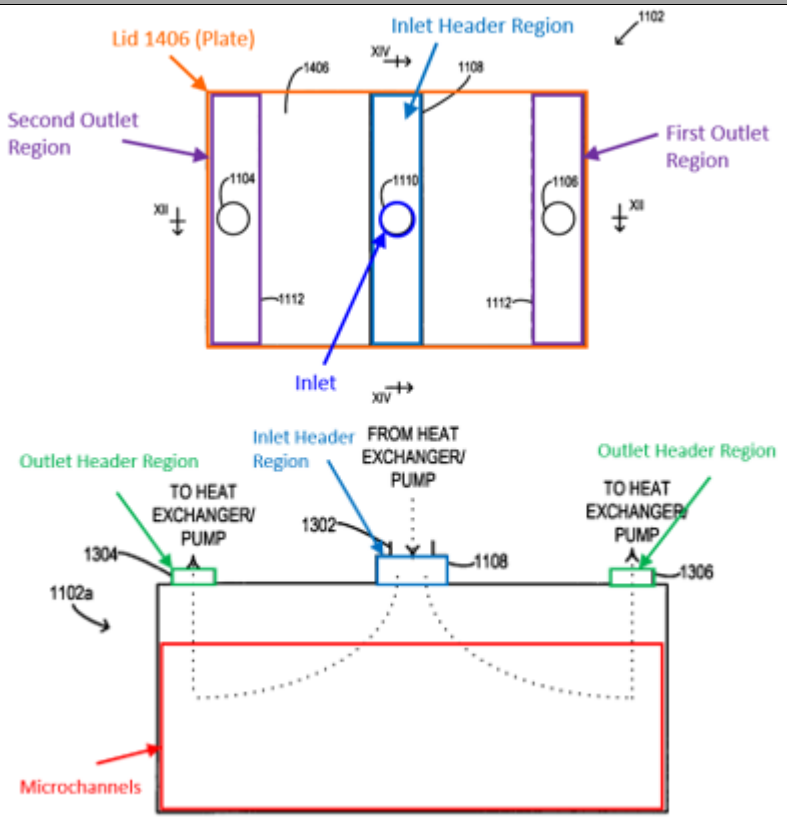
'330 Patent	Obvious based on *Antarctica* in view of *Chang*
	 The cover plate/lid (410/1406) is positioned over the microchannels such that a first fluid outlet opening from each microchannel is at the microchannel first ends (i.e. outlet 1304) and an opposite fluid outlet opening from each microchannel at each the opposite ends (i.e. outlet 1306). The "elongate aperture" is positioned between these ends. *See* 9:24-54 ("In operation, coolant is flowed into the microchannel assembly 1102 via the inlets 1104, 1106. The coolant flows from the inlets into opposite ends of the microchannels via reservoirs 1112 (indicated in phantom in FIG. 11). The coolant flows from the opposite ends of each microchannel to a central location of the respective microchannel, as indicated in FIG. 12. From the central location in the microchannel, the coolant flows up into the plenum 1108. In the case of each microchannel not located directly under the outlet 1110, the coolant from the respective microchannel flows through the plenum toward the outlet 1110 (i.e., toward the center of the lid 1406). The coolant then flows out of the microchannel assembly via the outlet 1110. . . . Instead of flowing the coolant

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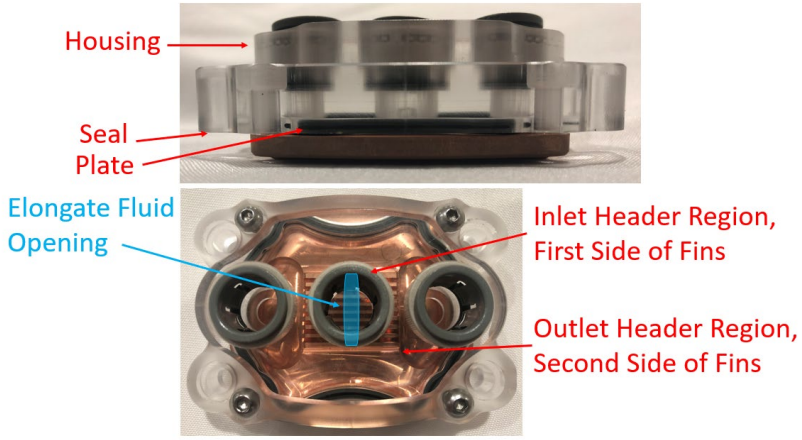
'330 Patent	Obvious based on *Antarctica* in view of *Chang*
	from the ends of the microchannels toward the center of the microchannel assembly, in other embodiments the coolant may flow from the center of the microchannel assembly out toward both ends of the microchannels, as schematically illustrated in FIG. 13. In this case essentially the same structure may be used, but the central port is used as an inlet (labeled 1302 in FIG. 13), and the ports at the ends of the microchannel are used as dual outlets (labeled 1304, 1306 in FIG. 13)."); FIGS. 2-5; 11, 13, 14.
[12.3] a housing spaced apart from the plate, wherein the housing has an inlet aperture and an outlet aperture, wherein the inlet aperture opens to an inlet header region positioned adjacent a first side of the plurality of juxtaposed fins and the outlet aperture opens from an outlet header region positioned adjacent a second side of the plurality of juxtaposed fins opposite the first side of the plurality of fins, and wherein the elongate aperture of the plate extends away from the inlet header region transversely relative to the plurality of juxtaposed fins; and	The *Antarctica* device has a housing spaced apart from the plate, wherein the housing has an inlet aperture and an outlet aperture, wherein the inlet aperture opens to an inlet header region positioned adjacent a first side of the plurality of juxtaposed fins and the outlet aperture opens from an outlet header region positioned adjacent a second side of the plurality of juxtaposed fins opposite the first side of the plurality of fins, and wherein the elongate aperture of the plate extends away from the inlet header region transversely relative to the plurality of juxtaposed fins.  To the extent CoolIT contends that the *Antarctica* does not have this claim element, such structure would have been obvious in view of *Chang*. Based on the *Antarctica* device in combination with the teachings of *Chang*, it would have been obvious for a person of ordinary skill in the art to modify the *Antarctica* device to have a housing structure like that in *Chang*. Such a modification would only have involved a

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'330 Patent	**Obvious based on *Antarctica* in view of *Chang***
	combination of prior art elements according to known methods to yield predictable results. As the Supreme Court explained, when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1740-1741 (2007). In the *Chang* device, a manifold plate (416) is spaced from the cover plate (410) covering the microchannels. The manifold plate has an inlet passage (426) and an outlet passage (436). The inlet passage opens into the inlet plenum (1108), which opens into the microchannels. The ends of the microchannels feed into reservoirs (1112), which in turn lead to the outlet passage through the manifold plate. The inlet plenum extends away from the inlet region transversely relative to the microchannels and side walls. *See* 5:14-55 ("In addition, the microchannel assembly 404 includes a manifold plate 416 that is mounted on the cover plate 410 to facilitate connection to the microchannel assembly of tubing (not shown) for the coolant. . . . The manifold plate 416 has formed therein an inlet passage 426. The inlet passage 426 provides fluid communication between a port 428 on the lower horizontal surface 420 of the manifold plate 416 and a port 430 on the left side vertical surface 422. . . . Advantageously, the sealant 418 (or alternatively solder, as the case may be) is deployed in such a manner that coolant flows from the port 428 to the inlet port 412 without leakage. . . . The manifold plate 416 also has formed therein an outlet passage 436. The outlet passage 436 provides fluid communication between a port 438 on the lower horizontal surface 420 of the manifold plate 416 and a port 440 on the right side vertical surface 424. . . . The port 438 of the manifold plate 416 is aligned with the outlet port 414 of the cover plate 410. Sealant 418 (or solder, as the case may be) may be deployed in such a manner that coolant flows from the outlet port 414 to the port 438 without leakage."); 9:55-62 ("The various embodiments described above may be combined in a variety of ways. For example, the manifold plate (FIGS. 4, 5) or integrated manifold/lid (FIG. 6) may be used in conjunction with the microchannel structures of FIGS. 2, 3 or 8, 10 and/or with the reduced flow length inlet/outlet arrangements of FIGS. 11-14. For example, a manifold plate or

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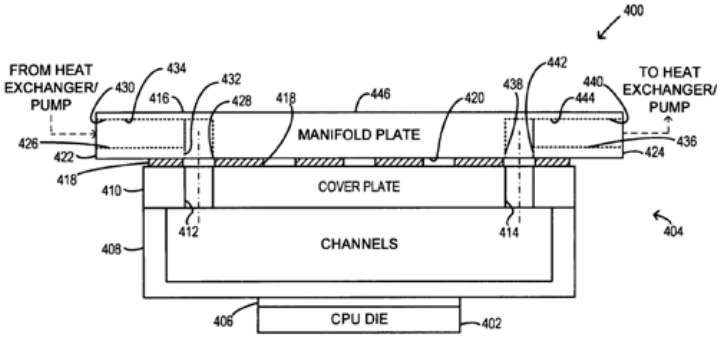
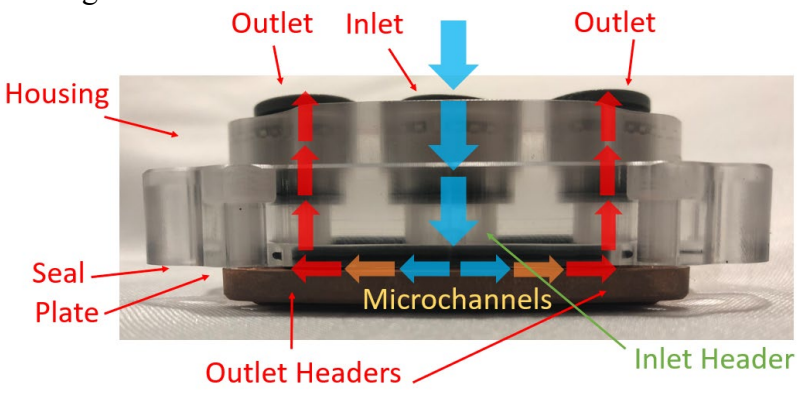
	lid may provide right-angle passages for each of the inlets/outlets shown in the embodiments or FIGS. 11-14."); FIGS. 2-5, 11, 13, 14. 
[12.4] a seal extending between the plate and the housing such that a flow of fluid from the inlet aperture of the housing to the inlet header region must pass through the elongate aperture of the plate and into the plurality of juxtaposed microchannels before the flow of the fluid passes through the outlet header region and the outlet aperture of the housing.	The *Antarctica* device has a seal extending between the plate and the housing such that a flow of fluid from the inlet aperture of the housing to the inlet header region must pass through the elongate aperture of the plate and into the plurality of juxtaposed microchannels before the flow of the fluid passes through the outlet header region and the outlet aperture of the housing.  The housing and the plate in *Antarctica* are connected to create a seal therebetween. If they were not connected, it also would have been obvious to provide a gasket between the plate and the housing to seal the inlet and outlet openings and prevent short-circuiting of the fluid. To the extent CoolIT contends that the *Antarctica* does not have this claim element, such structure would have been obvious in view of *Chang*. Based on the *Antarctica* device in combination with the teachings of *Chang*, it would have been

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	obvious for a person of ordinary skill in the art to modify the *Antarctica* device to have a housing, plate, and flowpath structure like that in *Chang*. Such a modification would only have involved a combination of prior art elements according to known methods to yield predictable results. As the Supreme Court explained, when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1740-1741 (2007). In the *Chang* device, the inlet plenum (1108) is positioned in the "middle" and on the topside of the microchannels/fins and "reservoirs" (1112) are positioned along the outer (second) side of the channels/fins. The manifold plate (416) ("housing") and cover plate (410) are sealed such that that coolant cannot pass between the inlet plenum and reservoirs other than via the flowpath through the microchannels. Coolant is directed from the middle inlet port (1302), through the inlet plenum (1108), to the microchannels formed by the side walls, passes through the microchannels, then exits the microchannels into the outer outlet reservoirs (1112), and finally exits through the outlet ports (1304, 1306). *See* 5:14-55 ("In addition, the microchannel assembly 404 includes a manifold plate 416 that is mounted on the cover plate 410 to facilitate connection to the microchannel assembly of tubing (not shown) for the coolant. . . . The manifold plate 416 has formed therein an inlet passage 426. The inlet passage 426 provides fluid communication between a port 428 on the lower horizontal surface 420 of the manifold plate 416 and a port 430 on the left side vertical surface 422. . . . Advantageously, the sealant 418 (or alternatively solder, as the case may be) is deployed in such a manner that coolant flows from the port 428 to the inlet port 412 without leakage. . . . The manifold plate 416 also has formed therein an outlet passage 436. The outlet passage 436 provides fluid communication between a port 438 on the lower horizontal surface 420 of the manifold plate 416 and a port 440 on the right side vertical surface 424. . . . The port 438 of the manifold plate 416 is aligned with the outlet port 414 of the cover plate 410. Sealant 418 (or solder, as the case may be) may be deployed in such a manner that coolant flows from the outlet port 414 to the port 438 without leakage."); 9:55-62 ("The

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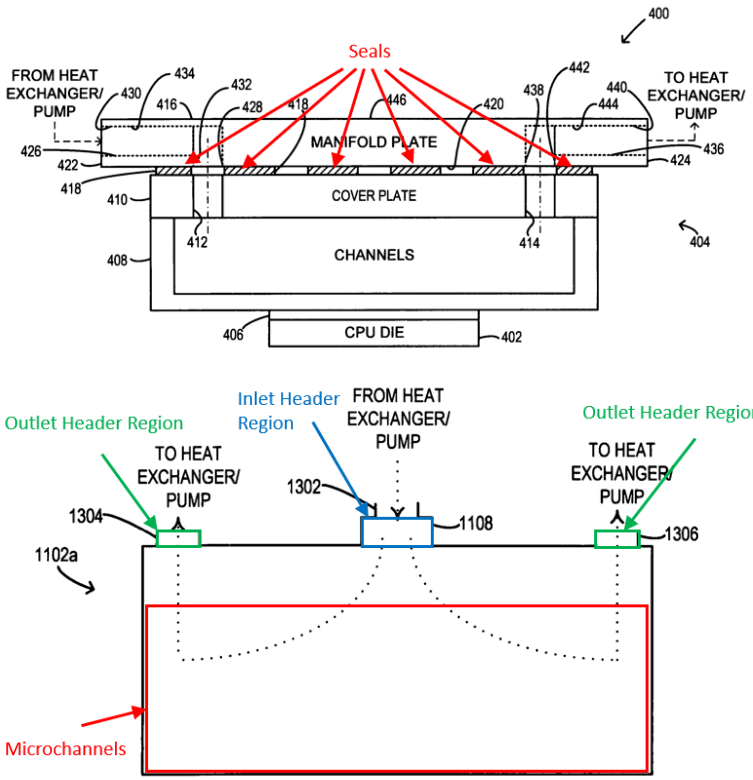
	various embodiments described above may be combined in a variety of ways. For example, the manifold plate (FIGS. 4, 5) or integrated manifold/lid (FIG. 6) may be used in conjunction with the microchannel structures of FIGS. 2, 3 or 8, 10 and/or with the reduced flow length inlet/outlet arrangements of FIGS. 11-14. For example, a manifold plate or lid may provide right-angle passages for each of the inlets/outlets shown in the embodiments or FIGS. 11-14.”); FIGS. 2-5, 11, 13, 14. 
14. A fluid heat exchanger comprising:	*See* claim term [1.0], above.
[14.1] a plurality of juxtaposed fins defining a corresponding plurality of juxtaposed microchannels, wherein each microchannel extends between a respective first end and a respective second end;	The *Antarctica* device has a plurality of juxtaposed fins defining a corresponding plurality of juxtaposed microchannels, wherein each microchannel extends between a respective first end and a respective second end.

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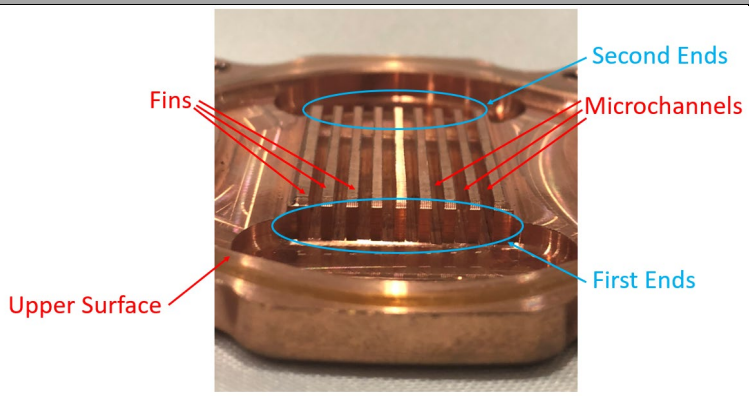
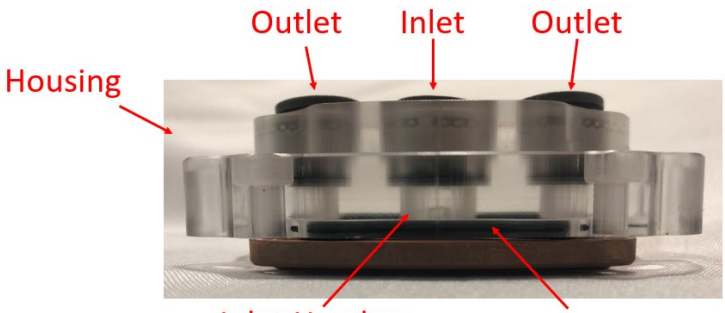
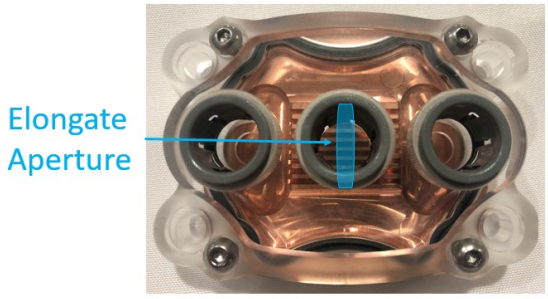
'330 Patent	**Obvious based on *Antarctica* in view of *Chang***
	
[14.2] an apertured plate overlying the microchannels and defining an inlet to the microchannels and an outlet from the microchannels;	The *Antarctica* device has an apertured plate overlying the microchannels and defining an inlet to the microchannels and an outlet from the microchannels.   To the extent CoolIT contends that the *Antarctica* does not have this claim element, such structure would have been obvious in view of *Chang*. Based on the *Antarctica* device in combination with the teachings of *Chang*, it would have been obvious for a person of ordinary skill in the art to modify the *Antarctica* device to have a plate structure like that in *Chang*.

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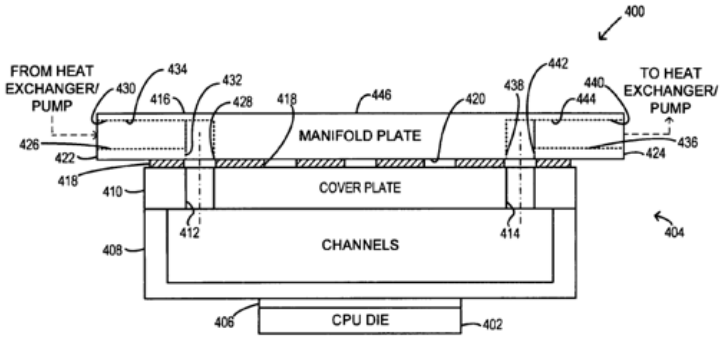
'330 Patent	Obvious based on *Antarctica* in view of *Chang*
	Such a modification would only have involved a combination of prior art elements according to known methods to yield predictable results. As the Supreme Court explained, when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1740-1741 (2007). In the device in *Chang*, an apertured cover plate (410) is positioned over the distal ends of the side walls and microchannels, closing off the microchannels. *See* 5:5-13 ("The microchannel assembly 404 also includes a cover plate 410 positioned on (e.g., bonded to) the microchannel structure 408 to define top walls of the microchannels. The cover plate 410 may be provided in accordance with conventional practices and may have formed therein an inlet port 412 and an outlet port 414. The inlet port 412 is to allow coolant to flow into the microchannel structure 408 and the outlet port 414 is to allow coolant to flow out of the microchannel structure 408.")  The cover plate/lid (410/1406) is positioned over the microchannels such that there is an inlet (1302) and outlets (1304, 1306). *See* 9:6-21 ("The lid 1406 also has a plenum 1108 (FIGS. 11, 12, 14) formed therein. As indicated in FIG. 14, the plenum 1108 extends across and above the microchannels 1404 at a central location of the microchannels. More specifically, and as seen from FIG. 11, the longitudinal axis of the plenum 1108 is perpendicular to a line (not shown) drawn from one inlet 1104 to the other inlet 1106 and is substantially equidistant from, and positioned between, the inlets 1104, 1106. It will be noted that the plenum 1108 is

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	centrally located relative to the microchannel assembly. At a central location along the plenum 1108, an outlet 1110 is formed to allow coolant to flow out of the microchannel assembly 1102. In some embodiments, a manifold (not shown) may be positioned on the lid 1406 to manage distribution of coolant between the inlets 1104, 1106 and to take coolant out from the outlet 1110."); *See* 9:24-54 ("In operation, coolant is flowed into the microchannel assembly 1102 via the inlets 1104, 1106. The coolant flows from the inlets into opposite ends of the microchannels via reservoirs 1112 (indicated in phantom in FIG. 11). The coolant flows from the opposite ends of each microchannel to a central location of the respective microchannel, as indicated in FIG. 12. From the central location in the microchannel, the coolant flows up into the plenum 1108. In the case of each microchannel not located directly under the outlet 1110, the coolant from the respective microchannel flows through the plenum toward the outlet 1110 (i.e., toward the center of the lid 1406). The coolant then flows out of the microchannel assembly via the outlet 1110. . . . Instead of flowing the coolant from the ends of the microchannels toward the center of the microchannel assembly, in other embodiments the coolant may flow from the center of the microchannel assembly out toward both ends of the microchannels, as schematically illustrated in FIG. 13. In this case essentially the same structure may be used, but the central port is used as an inlet (labeled 1302 in FIG. 13), and the ports at the ends of the microchannel are used as dual outlets (labeled 1304, 1306 in FIG. 13)."); FIGS. 2-5; 11, 13, 14.

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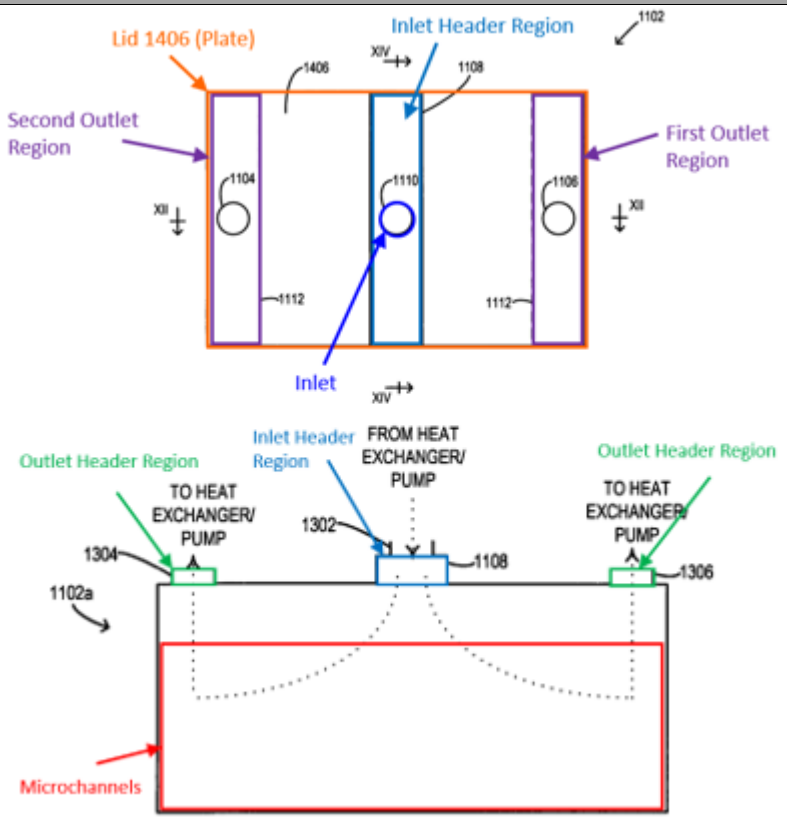
’330 Patent	Obvious based on *Antarctica* in view of *Chang*
	
[14.3] a housing having an inlet and an outlet, wherein the inlet opens to an inlet header region juxtaposed with a first side of the plurality of juxtaposed fins, and wherein the outlet opens from an outlet header region juxtaposed with a second side of the plurality of juxtaposed fins, wherein the first side and the second side are positioned opposite relative to each other and wherein the inlet to the microchannels defined by the apertured plate extends between the first side and the second side at a position	The *Antarctica* device has a housing having an inlet and an outlet, wherein the inlet opens to an inlet header region juxtaposed with a first side of the plurality of juxtaposed fins, and wherein the outlet opens from an outlet header region juxtaposed with a second side of the plurality of juxtaposed fins, wherein the first side and the second side are positioned opposite relative to each other and wherein the inlet to the microchannels defined by the apertured plate extends between the first side and the second side at a position between the first ends and the second ends.

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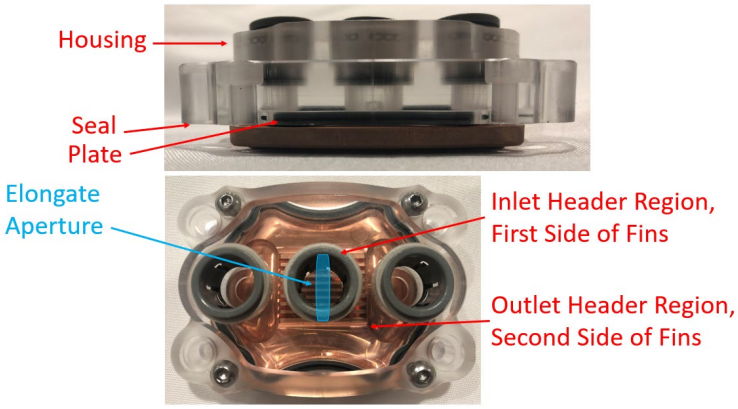
between the first ends and the second ends; and	 To the extent CoolIT contends that the *Antarctica* does not have this claim element, such structure would have been obvious in view of *Chang*. Based on the *Antarctica* device in combination with the teachings of *Chang*, it would have been obvious for a person of ordinary skill in the art to modify the *Antarctica* device to have a housing structure like that in *Chang*. Such a modification would only have involved a combination of prior art elements according to known methods to yield predictable results. As the Supreme Court explained, when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1740-1741 (2007). In the *Chang* device, a manifold plate (416) is spaced from the cover plate (410) covering the microchannels. The manifold plate has an inlet passage (426) and an outlet passage (436). The inlet passage opens into the inlet plenum (1108), which opens into the microchannels. The ends of the microchannels feed into reservoirs (1112), which in turn lead to the outlet passage through the manifold plate. The inlet plenum (1108) is positioned in the "middle" and on the topside of the microchannels/fins and output manifolds ("reservoirs" 1112) are positioned along the outer (second) side of the channels/fins. Coolant is directed from the middle inlet port (1302), through the inlet plenum (1108), to the microchannels formed by the side walls, passes through the microchannels, then exits the microchannels into the outer outlet reservoirs

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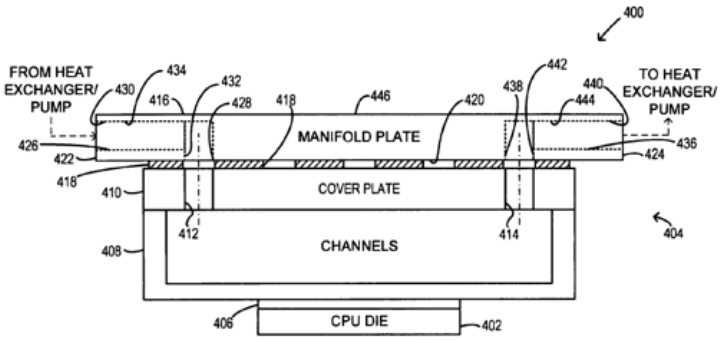
'330 Patent	Obvious based on *Antarctica* in view of *Chang*
	(1112), and finally exits through the outlet ports (1304, 1306). *See* 5:14-55 ("In addition, the microchannel assembly 404 includes a manifold plate 416 that is mounted on the cover plate 410 to facilitate connection to the microchannel assembly of tubing (not shown) for the coolant. . . . The manifold plate 416 has formed therein an inlet passage 426. The inlet passage 426 provides fluid communication between a port 428 on the lower horizontal surface 420 of the manifold plate 416 and a port 430 on the left side vertical surface 422. . . . Advantageously, the sealant 418 (or alternatively solder, as the case may be) is deployed in such a manner that coolant flows from the port 428 to the inlet port 412 without leakage. . . . The manifold plate 416 also has formed therein an outlet passage 436. The outlet passage 436 provides fluid communication between a port 438 on the lower horizontal surface 420 of the manifold plate 416 and a port 440 on the right side vertical surface 424. . . . The port 438 of the manifold plate 416 is aligned with the outlet port 414 of the cover plate 410. Sealant 418 (or solder, as the case may be) may be deployed in such a manner that coolant flows from the outlet port 414 to the port 438 without leakage."); 9:55-62 ("The various embodiments described above may be combined in a variety of ways. For example, the manifold plate (FIGS. 4, 5) or integrated manifold/lid (FIG. 6) may be used in conjunction with the microchannel structures of FIGS. 2, 3 or 8, 10 and/or with the reduced flow length inlet/outlet arrangements of FIGS. 11-14. For example, a manifold plate or lid may provide right-angle passages for each of the inlets/outlets shown in the embodiments or FIGS. 11-14."); FIGS. 2-5, 11, 13, 14. 
[14.4] a seal extending between the housing and	The *Antarctica* device has a seal extending between the housing and the apertured plate, wherein the inlet to the

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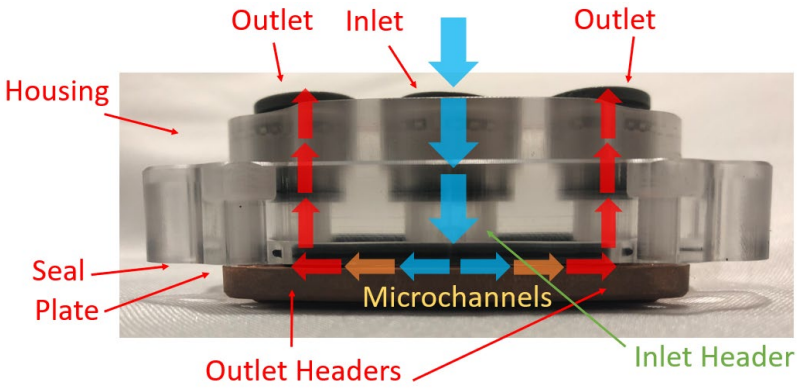
’330 Patent	Obvious based on *Antarctica* in view of *Chang*
the apertured plate, wherein the inlet to the microchannels is separated from the outlet from the microchannels by the seal such that a fluid flow from the inlet header region is directed through the inlet to the microchannels and into one or more of the microchannels before the fluid passes from the microchannels into the outlet header region and through the housing outlet.	microchannels is separated from the outlet from the microchannels by the seal such that a fluid flow from the inlet header region is directed through the inlet to the microchannels and into one or more of the microchannels before the fluid passes from the microchannels into the outlet header region and through the housing outlet.  The housing and the plate in *Antarctica* are connected to create a seal therebetween. If they were not connected, it also would have been obvious to provide a gasket between the plate and the housing to seal the inlet and outlet openings and prevent short-circuiting of the fluid. To the extent CoolIT contends that the *Antarctica* does not have this claim element, such structure would have been obvious in view of *Chang*. Based on the *Antarctica* device in combination with the teachings of *Chang*, it would have been obvious for a person of ordinary skill in the art to modify the *Antarctica* device to have a housing, plate, and flowpath structure like that in *Chang*. Such a modification would only have involved a combination of prior art elements according to known methods to yield predictable results. As the Supreme Court explained, when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1740-1741 (2007). In the *Chang* device, the inlet plenum (1108) is positioned in the “middle” and on the topside of the microchannels/fins and “reservoirs” (1112) are positioned along the outer (second) side

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'330 Patent	**Obvious based on *Antarctica* in view of *Chang***
	of the channels/fins. The manifold plate (416) ("housing") and cover plate (410) are sealed such that that coolant cannot pass between the inlet plenum and reservoirs other than via the flowpath through the microchannels. Coolant is directed from the middle inlet port (1302), through the inlet plenum (1108), to the microchannels formed by the side walls, passes through the microchannels, then exits the microchannels into the outer outlet reservoirs (1112), and finally exits through the outlet ports (1304, 1306). *See* 5:14-55 ("In addition, the microchannel assembly 404 includes a manifold plate 416 that is mounted on the cover plate 410 to facilitate connection to the microchannel assembly of tubing (not shown) for the coolant. . . . The manifold plate 416 has formed therein an inlet passage 426. The inlet passage 426 provides fluid communication between a port 428 on the lower horizontal surface 420 of the manifold plate 416 and a port 430 on the left side vertical surface 422. . . . Advantageously, the sealant 418 (or alternatively solder, as the case may be) is deployed in such a manner that coolant flows from the port 428 to the inlet port 412 without leakage. . . . The manifold plate 416 also has formed therein an outlet passage 436. The outlet passage 436 provides fluid communication between a port 438 on the lower horizontal surface 420 of the manifold plate 416 and a port 440 on the right side vertical surface 424. . . . The port 438 of the manifold plate 416 is aligned with the outlet port 414 of the cover plate 410. Sealant 418 (or solder, as the case may be) may be deployed in such a manner that coolant flows from the outlet port 414 to the port 438 without leakage."); 9:55-62 ("The various embodiments described above may be combined in a variety of ways. For example, the manifold plate (FIGS. 4, 5) or integrated manifold/lid (FIG. 6) may be used in conjunction with the microchannel structures of FIGS. 2, 3 or 8, 10 and/or with the reduced flow length inlet/outlet arrangements of FIGS. 11-14. For example, a manifold plate or lid may provide right-angle passages for each of the inlets/outlets shown in the embodiments or FIGS. 11-14."); FIGS. 2-5, 11, 13, 14.

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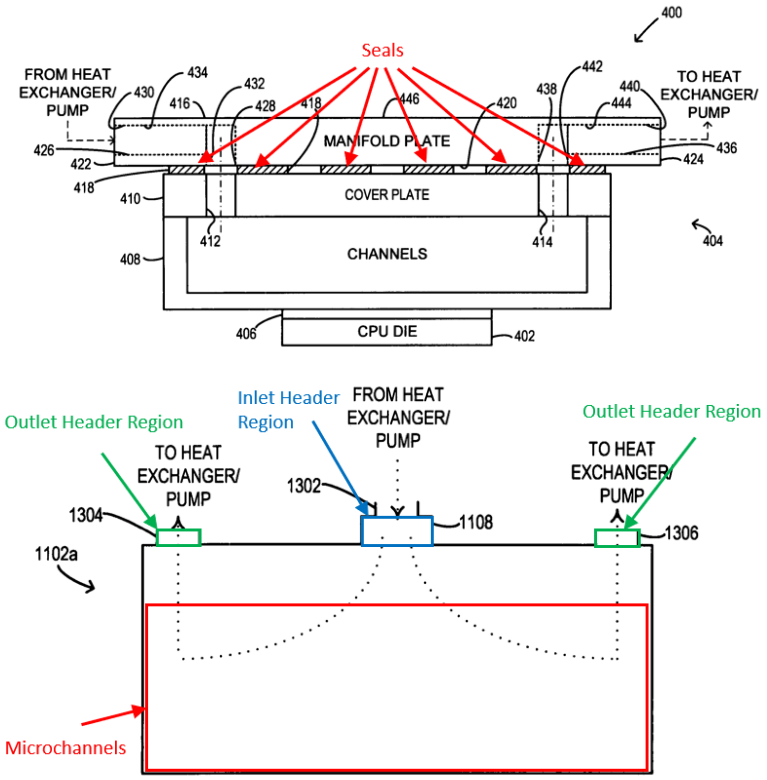
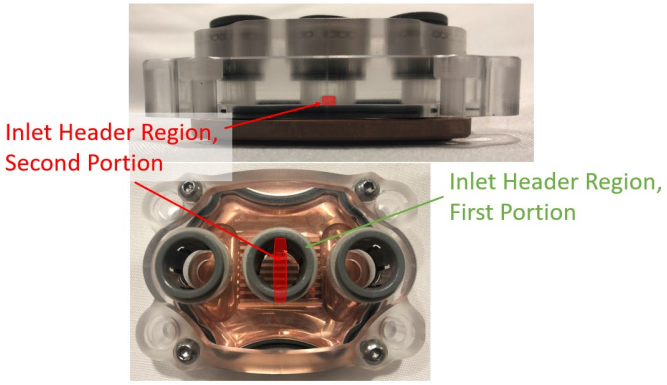
	
15. A fluid heat exchanger according to claim 14, wherein the inlet header region juxtaposed with a first side of the plurality of juxtaposed fins constitutes a first portion of an inlet header, wherein a second portion of the inlet header extends transversely over the microchannels.	*See* claim terms [14.0]-[14.4], above. The *Antarctica* device has fluid heat exchanger wherein the inlet header region juxtaposed with a first side of the plurality of juxtaposed fins constitutes a first portion of an inlet header, wherein a second portion of the inlet header extends transversely over the microchannels. 

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	To the extent CoolIT contends that the *Antarctica* does not have this claim element, such structure would have been obvious in view of *Chang*. Based on the *Antarctica* device in combination with the teachings of *Chang*, it would have been obvious for a person of ordinary skill in the art to modify the *Antarctica* device to have a housing, plate, and flowpath structure like that in *Chang*. Such a modification would only have involved a combination of prior art elements according to known methods to yield predictable results. As the Supreme Court explained, when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. *KSR International Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1740-1741 (2007). In the *Chang* device, the heat exchanger has a first portion of the inlet header by the port, and a second portion that extends transversely over the microchannels. *See* FIGS. 1-5, 11, 13, 14.